

Claims

1. A material having a volume resistivity at room temperature of not higher than $1 \times 10^{13} \Omega \cdot \text{cm}$, said material being composed of an aluminum nitride sintered body containing samarium in a converted content calculated as samarium oxide of not lower than 0.04 mole percent, said sintered body containing aluminum nitride phase and samarium-aluminum complex oxide phase.
2. The material of claim 1, wherein said samarium-aluminum complex oxide phase contains $\text{SmAl}_{11}\text{O}_{18}$ phase.
3. The material of claim 1 or 2, wherein said sintered body comprises aluminum nitride grains having a mean diameter of not lower than $3 \mu\text{m}$.
4. The material of claim 1 or 2, wherein the molar ratio of said converted content of samarium calculated as samarium oxide to an calculated content of aluminum oxide ($\text{Sm}_2\text{O}_3 / \text{Al}_2\text{O}_3$) is 0.05 to 0.5.
5. The material of claim 1 or 2, wherein said sintered body has an activation energy of temperature dependency of volume resistivity from room temperature to 300°C of not higher than 0.4 eV.
6. The material of claim 1, wherein said samarium-aluminum complex oxide phase forms network microstructure.
7. The material of claim 2, wherein said $\text{SmAl}_{11}\text{O}_{18}$ phase forms network microstructure.
8. The material of claim 1 or 2, wherein said sintered body has a lightness of not higher than N4 measured according to JIS Z8721.
9. The material of claim 1 or 2, wherein said sintered body contains one or more metal element selected from the group consisting of metal elements belonging to the periodic table IVA, VA, VIA, VIIA and VIIIA in a content

calculated as metal element of not lower than 0.01 weight percent.

10. The material of claim 1 or 2, wherein said sintered body contains at least one second rare earth element other than samarium, and wherein the molar ratio of a converted content of said second rare earth element calculated as rare earth oxide to said converted content of samarium calculated as samarium oxide (said converted content of said second rare earth element/said converted content of samarium) is not higher than 2.0.

11. The material of claim 10, wherein the molar ratio of total of converted contents of all the rare earth elements calculated as rare earth oxides to a calculated content of aluminum oxide (said total of converted contents of all the rare earth elements/said content of aluminum oxide) is 0.05 to 0.5.

12. An aluminum nitride sintered body containing samarium in a converted content calculated as samarium oxide of not lower than 0.04 mole percent, said sintered body containing aluminum nitride phase and $\text{SmAl}_{11}\text{O}_{18}$ phase.

13. The sintered body of claim 12, wherein said $\text{SmAl}_{11}\text{O}_{18}$ phase forms network microstructure.

14. The sintered body of claim 12 or 13, having a volume resistivity at room temperature of not higher than $1 \times 10^{13} \Omega \cdot \text{cm}$.

15. The sintered body of claim 12, comprising at least one second rare earth element other than samarium, wherein the molar ratio of a converted content of said second rare earth element calculated as rare earth oxide to said converted content of samarium calculated as samarium oxide (said converted content of said second rare earth element/said converted content of samarium) is not higher than 2.0.

16. The sintered body of claim 15, wherein the molar ratio of total of converted contents of all the rare earth elements calculated as rare earth

oxides to a calculated content of aluminum oxide (said total of converted contents of all the rare earth elements/said content of aluminum oxide) is 0.05 to 0.5.

17. The sintered body of claim 15, wherein said second rare earth element is one or more element selected from the group consisting of yttrium, lanthanum, cerium, gadolinium, dysprosium, erbium and ytterbium.

18. The sintered body of claim 15, comprising phase of complex oxide of said second rare earth element and aluminum.

19. The sintered body of claim 12 comprising SmAlO_3 phase.

20. The sintered body of claim 12 comprising aluminum nitride grains with a mean diameter of not lower than $3 \mu\text{m}$.

21. The sintered body of claim 12, wherein the molar ratio of said converted content of samarium calculated as samarium oxide to a calculated content of aluminum oxide ($\text{Sm}_2\text{O}_3 / \text{Al}_2\text{O}_3$) is 0.05 to 0.5.

22. The sintered body of claim 12 having a lightness of not higher than N4 measured according to JIS Z8721.

23. The sintered body of claim 12 comprising one or more transition metal element selected from the group consisting of metal elements belonging to the periodic table IVA, VA, VIA, VIIA and VIIIA in a content calculated as metal element of not lower than 0.01 weight percent.

24. The sintered body of claim 23, comprising said transition metal element in a content calculated as metal element of not higher than 1.0 weight percent.

25. The sintered body of claim 23 comprising crystalline phase of the nitride of said transition metal element.

26. The sintered body of claim 12 having an activation energy of temperature dependency of volume resistivity from room temperature to